

BS
rubber, halogenated aliphatic phosphates, halogenated aromatic phosphates and halogen-containing organic compounds which contain sulfur or nitrogen atoms.

REMARKS

All the claims submitted for examination have been objected to and/or rejected on formal and/or substantive grounds. Applicants have amended their claims and respectfully submit that all the claims currently in this application are patentable over the objection and rejections of record.

Turning first to the objection raised in the outstanding Official Action, the Official Action objects to Claim 24, under 37 C.F.R. §1.75, as being a substantial duplicate of Claim 21.

Applicants have cancelled Claim 24, as well as Claim 25, and have added new Claim 28 in their place. New Claim 28 is directed to a masterbatch, from which Claim 26 has been amended to depend. Claim 28, directed as it is to a masterbatch, a product, does not in any way claim the same subject matter as Claim 21, which is directed to a process of stabilizing a polyamide. As such, the objection imposed in the outstanding Official Action has been overcome.

The sole formal ground of rejection is directed to Claim 26. Claim 26 stands rejected, under 35 U.S.C. §112, second paragraph, as being indefinite.

The rejection of Claim 26 is well taken insofar as, due to an oversight, its dependency was omitted. Claim 26 has been amended to depend from new Claim 28. In addition, its subject has been amended to recite a masterbatch, rather than a process. Applicants submit that the amendment to Claim 26 removes the indefiniteness which prompted its rejection.

All the claims submitted for examination in this application, Claims 14-27, stand rejected on substantive grounds, under 35 U.S.C. §103(a), as being unpatentable over U.S. Patent 3,428,597 to Dikotter et al. in view of U.S. Patent 3,507,833 to Nentwig et al.

The rejection of record is predicated on the remarks made in the first Official Action on the merits wherein it was argued that Dikotter et al. discloses stabilization of polyamides wherein a complex compound of cuprous iodide and a hydrocarbon phosphine or a hydrocarbon phosphite is used as a stabilizer.

The Official Action applies the secondary Nentwig et al. reference insofar as it admits that Dikotter et al. does not employ an organic halogen compound. Nentwig et al., the Official Action avers, discloses a stabilized polyamide composition which includes copper and halogenated phosphite additives. The Official Action concludes that the utilization of halogenated phosphite additives in Nentwig et al. reads on an organic halogen compound and thus makes obvious the claims of the present application.

Applicants have amended all the independent claims present in the instant application to limit the organic halogen compounds to the Markush group recited therein. Support for this amendment is provided in the originally filed specification at Page 6, line 27 – Page 27, line 10, wherein all members of the Markush group of organic halogen compounds recited in the amended independent claims are set forth.

It is emphasized that the first of the two paragraphs supporting the Markush group of organic halogen compounds in the specification has been amended to correct obvious spelling errors therein.

The amended claims of the present application, which also limit the concentrations of the copper complex and the organic halogen compound, such that the molar ratio of copper to

halogen is in the range of between 1:1 and 1:3,000, which is supported in the originally filed specification at Page 7, lines 26-27, is clearly outside the scope of the combined teachings of Dikotter et al. and Nentwig et al.

The Official Action has admitted that Dikotter et al., the principal reference, does not itself make obvious any of the claims of the present application. The Official Action has further admitted, it is the teaching of Nentwig et al., limited as that teaching is to a hydrocarbon phosphine or a hydrocarbon phosphite, that predicates support for the allegation that the prior art, as exemplified by the combined teaching of Dikotter et al. and Nentwig et al., that makes obvious a polyamide stabilizer which includes both a copper complex and an organic halogen compound.

The amendment to the claims of the present application limits the organic halogen compound to the Markush group recited in the independent claims. None of these halogen compounds are hydrocarbon phosphines or hydrocarbon phosphites. As such, the claims of the present application are directed to a process of stabilizing a polyamide composition, as well as a masterbatch, which is not disclosed or made obvious by the combined teaching of the two applied references.

Even if one were to argue that the members of the Markush group, which constitutes the organic halogen compound of the amended claims of the present application, make obvious a hydrocarbon phosphine or phosphite, which is clearly improper given the distinctions between the organic compounds of the Markush group of the claims of the present application and hydrocarbon phosphines and phosphites, still the combined teaching of the two applied references would not make obvious any of the claims of the present application.

For one thing the combination of Dikotter et al. and Nentwig et al. is improper. Whereas Dikotter et al. indeed discloses a copper complex, Nentwig et al. emphasizes optimum results are obtained when alkali halides, which produce copper salts, are utilized.

Attention is directed to Nentwig et al., at Column 2, lines 53-61, wherein it is recited that iodides of alkali metals or alkaline earth metals produce the most desirable results. The specification of the present application, on the other hand, is replete with warnings against the utilization of such salts in applications wherein polyamides are employed in electrical applications.

Of greater importance is the fact that stabilized polyamide compositions prepared in accordance with the invention of the present application, clearly distinguished from the combined teaching of the two applied references, provide significantly improved results when the polyamide is employed in electronic applications. Attention is particularly directed to the showing presented in the specification of the present application wherein it is demonstrated that stabilizers within the scope of the present application, e.g. Examples 5-26 in Table 1, produce combined better CTI-values and half-time values than do stabilizer systems made in accordance with the prior art, as exemplified by the applied Dikotter et al. and Nentwig et al. references.

As indicted in the specification, stabilizers of the prior art provide good thermal stabilization. However, the stabilizers of the prior art, exemplified by the applied references, employ salts, which increase electrical conductivity, thus reducing tracking resistance, as indicated by lower CTI values, which, as indicated in the specification, are highest for polyamides free of thermal stabilizers.

As indicated in the specification, polyamides employed in electrical products must possess CTI values of at least 550, preferably 600. The novel thermal stabilizer system of the present application permits polyamides in which they are introduced to possess CTI values at or above these CTI values. Polyamides of the prior art, however, possess, for the most part CTI values far below the minimum satisfactory value.

Attention is directed to the data included in Table 2. Therein it is seen that only one prior art composition possessed an acceptable CTI value, e.g. 600. However, that composition failed in terms of thermal stability, as determined by heat aging.

As indicated in the specification at Page 14, heat aging, as determined by Standard Tests DIN 53497 and 53446, is measured by half time values of polyamide. Suffice it to say, the higher the half time value the more thermally stabilized is the polyamide. In the one comparison example where a satisfactory CTI value of 600 was obtained, the half time value was a total failure. The half time value of 24 hours pales in comparison to the half time value of Examples 5-26, within the scope of the present invention, which were all in the acceptable range.

The above remarks do not take into consideration the absence of discolorization which is obtained utilizing the thermal stabilizer of the present application, as discussed in applicant's Amendment under 37 C.F.R. §1.111 filed June 26, 2002.

The above remarks, which establish the patentable nature of the amended claims of the present application, evidence the propriety of entering the present amendment. At a minimum, the amendment to the present application places this case in better condition for appeal.

The above amendment and remarks establish the patentable nature of all the claims currently in this application. Notice of Allowance and passage to issue of these claims, Claims 14-23 and 26-28, is therefore respectfully solicited.

Respectfully submitted,

A handwritten signature in cursive script, reading "Marvin Bressler", followed by a long horizontal flourish.

Marvin Bressler
Registration No. 25,132
Attorney for Applicants

Scully, Scott, Murphy & Presser
400 Garden City Plaza
Garden City, New York 11530
516-742-4343
MB:ml

APPENDIX

RENDITION OF APPLICATION AMENDMENT SHOWING CHANGES MADE

IN THE SPECIFICATION:

Amendment of paragraph beginning at Page 6, line 27:

Generally all organic halogen compounds may be employed. Examples of suitable organic compounds are aromatic compounds, such as decabromodiphenyl [dekabromediphenyl], decabromodiphenyl [dekabromdiphenol] ether, chlorinated or brominated styrene oligomers, polydibromostyrene [polydibromestyrene], tetrabromobisphenol-A [tetrabromebisphenyl-A], tetrabisphenol-A [tetrabisphenyl-A] derivatives, such as epoxy derivatives, such as BEB 6000 and BEG 5000C, which formulas are given below, and chlorinated dimethanedibenzo(a,e)cyclooctene [dimethanedibenzo(a,e)cycloocten] derivatives. Examples of suitable aliphatic compounds are chloroparaffin [chloroparafin], polyvinyl chloride, polyvinylidene chloride, polytetrafluoroethylene or fluoro rubber.

IN THE CLAIMS:

Claim 14 (Amended): A polyamide composition comprising a polyamide, at least one copper complex and at least one organic ^{halogen} compound, said organic ^{halogen} compound selected from the group consisting of ²⁹ decabromodiphenyl, decabromodiphenyl ether, chlorinated styrene oligomers, brominated styrene oligomers, polydibromostyrene, tetrabromobisphenol-A, tetrabisphenol-A derivatives, chlorinated dimethanedibenzo(a,e) cyclooctene derivatives, chloroparaffin, polyvinyl chloride, polyvinylidene chloride, polytetrafluoroethylene, fluoro rubber, halogenated aliphatic phosphates, halogenated aromatic phosphates and halogen-

OK

containing organic compounds which contain sulfur or nitrogen atoms, said molar ratio of copper to halogen being in the range of between 1:1 and 1:3,000.

Claim 21 (Amended): A process of stabilizing a polyamide comprising combining a polyamide with at least one copper complex and at least one organic compound such that the molar ratio of copper to halogen is in the range of between 1:1 and 1:3,000, said organic halogen compound selected from the group consisting of decabromodiphenyl, decabromodiphenyl ether, chlorinated styrene oligomers, brominated styreneoligomers, polydibromostyrene, tetrabromobisphenyl-A, tetrabisphenol-A derivatives, chlorinated dimethanedibenzyl(a,e) cyclooctene derivatives, chloroparaffin, polyvinylchloride, polyvanalidene chloride, polytetrafluoroethylene, fluoro rubber, halogenated aliphatic phosphates, halogenated aromatic phosphates and halogen-containing organic compounds which contain sulfur or nitrogen atoms.

Claim 26 (Amended): A masterbatch [process] in accordance with Claim 28 wherein said copper complex is selected from the group consisting of a complex of copper and a phosphine compound, a complex of copper and a mercaptobenzamidazole compound and a complex of copper, a phosphine compound and a mercaptobenzamidazole compound.

Claim 27 (Amended): A process in accordance with Claim [25 of] 21 comprising adding a compound selected from the group consisting of an organic phosphate, an inorganic phosphonate and an inorganic hypophosphite.